Higg Brand Retail Module Guidance:
Addressing supply chain impacts

Objective of this document

This guidance document was developed to complement questions 16 and 17 in the Brand > Supply Chain section. It is intended to help you understand how to get started or continue to refine your program to address the impacts related to Chemical Use, GHG emissions, Wastewater Discharge and Water Use.

Introduction - what kinds of impacts do I need to address in my supply chain?

For most companies, the key driver to this question will be the outcome of their holistic risk assessment (or materiality assessment). A company should work to understand what the primary areas of potential harm are likely to be across their value chain, based on their sourcing, operations and customer impacts, the key processes and materials used in their products, and the locations in which each part of their value chain is located. For more information on how to carry out a risk assessment, please review the guide "Conducting Environmental Risk Assessment" on Howtohigg.org

Whilst the specific materiality of each company will vary according to their risk or materiality assessment, there are some typical impacts and key focus areas for the industry, particularly when it comes to addressing impacts and risks within factory supply chain partners.

Typically, brands will begin working to address the impacts from tier 1 and 2 sites, with some also addressing tier 3. For textiles and leather-related materials, the typically greatest environmental impacts in this part of the value chain will include:

Area	Relevant processes	Types of harm[1]
GHG emissions and energy use (Question 16, Higg BRM – Brand section)	• Energy (often grid energy) is use for machines and HVAC in CMT (Cut, Make, Trim), tanning processes and knitting, weaving, ginning and spinning processes. • High-heat energy is often used for wet processing of fabric and garments including finishing and laundry.	• Grid energy used for lower-heat processes is usually electricity, and the GHG emissions from that energy use depends on whether there is any on/offsite renewable energy being used/purchased, and what the typical grid energy mix is within that country or region. Conversion factor calculations are required to turn energy data into GHG emissions figures – the Higg FEM is able to make these calculations for supplier sites. • For high-heat energy use, typical sources are coal, oil, gas, timber or biofuels. Each of these sources will have a different GHG impact, with biofuel sources (especially from waste products) being the lowest impact and coal usually being the highest.
Water Consumption (Question 16, Higg BRM – Brand section)	• The main consumption of water for textiles is within wet processes – dyeing, finishing, laundry and tanning. • Some additional activities in tier 1 – tier 3 will require water for example in some processes or for cooling, and some minimal water use for bathrooms, kitchens etc.	• Sources of water for factories include groundwater, rainwater, surface water and municipal supply. • The potential harm of the water use by a factory depends partly on the level of stress on the water source being used. If groundwater levels are low, using groundwater is likely to be more harmful. • If water is extracted from one source (e.g. groundwater) and the same volume discharged to another (e.g. surface water), this does not mean that there is no harm from water use – especially if water quality is also

[1] Harm and impact is used interchangeably within this document and Higg BRM

		affected. Water from different sources does not serve the same role within the hydrological system, and is not available to other water users or to nature in the same way.
Chemical use and chemical management (Question 17, Higg BRM – Brand section)	• Chemicals are used in many steps of the value chain, such as: Dyeing and finishing; tanning; some forms of fibre processing particularly for synthetic or cellulosic fibres.	• Chemicals are high in embodied greenhouse and can account for relatively high amounts of GHG within the value chain. • There is potential for toxic chemicals to be released causing toxic air/water/soil pollution. • Even less-toxic chemicals can negatively affect the quality of the environment by using up oxygen in soil and water bodies when being broken down, or by changing the PH balance. This can make soil or water inhospitable or even deadly for wildlife and micro-organisms.
Wastewater quality including ETP functionality (Question 17, Higg BRM – Brand section)	• The main impacts around wastewater come from wet processes – dyeing, finishing, laundry and tanning. (continued on next page) • There will also be impacts further along in tier 3 where fibres such as cellulosics or synthetics are processed using chemicals which may be discharged into the environment.	• Discharging untreated or poorly treated wastewater into the environment can lead to toxic chemicals accumulating in water bodies used by people or nature, and can also use up oxygen in water through the breakdown of biological or chemical pollutants. • PH and temperature can also be affected • Water which is polluted by textiles wastewater can reduce biodiversity, kill key species, or harm local populations using water bodies • Treating in line with local regulations is often not enough to ensure that water is of suitable quality, either because standards are too low or enforcement is not strong enough in some countries. • Even sites that are discharging to municipal systems or common effluent treatment plants may be having harm, since these facilities may also be treating water inadequately.

For each of these selected key topics, this document will briefly outline the processes and options that are generally useful for brands and retailers to implement in partnership with their suppliers.

It is important to note that although these types of interventions are typically useful for a factory, **each site will have a unique setup and challenges to address –** particularly for more intensive processes such as dyeing and finishing. For this reason, it is **important to also give suppliers access to a site-specific opportunity assessment carried out by credible improvement programmes or technical auditors**, particularly if they are considering making possible upgrades to machinery or factory process steps.

1. GHG and energy – potential risk mitigation activities

Energy use, and subsequent Greenhouse Gas or GHG emissions, are one of the most significant impacts from the fashion industry. It is estimated that the industry contributes somewhere between 2%[2] and 8%[3] of global GHG emissions.

Globally, across all industries, GHG emissions are grouped into three categories – Scope 1, Scope 2, and Scope 3.

- Scope 1 is the direct energy used by a company or organisation (e.g. direct onsite fuel consumption)
- Scope 2 is the indirect energy used by that organisation (e.g. grid electricity).
- Scope 3 covers 'indirect' emissions (for fashion companies, this encompasses supply chain, customer impacts, and the end of life for their products).

Supply chain impacts all fall into scope 3 for a brand or retailer; and in particular the manufacturing phase of the value chain is where much of the intensive energy use and GHG emissions can be found.

The most energy and GHG-intensive parts of the fashion value chain tend to be found in the following places:

- Raw material cultivation or extraction
- Processing of raw materials and high-heat energy intensive activities such as dyeing fabric
- The customer use phase of the product, where activities like washing, drying and ironing clothes can use significant energy

For manufacturing, there are two main types of energy to consider –

1. Grid energy typically used for low heat activities such as Cut, Make, Trim
2. Off-grid energy sources, often required for high-heat functions such as dyeing.

In order to convert energy use into the relative greenhouse gas emissions, a company will need to know the relevant 'conversion factors' for each type of energy.

For example, to convert grid electricity used by a factory into the relevant GHG emissions, you will need to know the GHG emissions for the national or regional electricity grid. This is determined by which energy sources the grid energy mix is made up of – in some countries coal power plants make up more of the mix, in others renewable or nuclear energy may play more of a role. This determines how much CO2 equivalent tonnes of greenhouse gasses are emitted for a specific amount of electricity.

High-heat and off-grid energy sources will also have a GHG emission factor to convert amounts of energy used into GHG emissions – and sources such as coal will have much higher CO2 equivalent emissions that more sustainable sources such as generation 2 bio-mass alternatives.

Conversion factors recommended by the UNFCCC and created by IPCCC can be found here, and the SAC MSI and the SAC FEM also embed these emission factors to give overall GHG emissions from supplier energy use.

[2] Ellen MacArthur Foundation, Making Fashion Circular https://www.ellenmacarthurfoundation.org/our-work/activities/make-fashion-circular/report

[3] Quantis, Measuring Fashion's Impact https://quantis-intl.com/wp-content/uploads/2018/03/measuringfashion_globalimpactstudy_full-report_quantis_cwf_2018a.pdf

Ideally, brands and retailers should aim to use real energy usage data for calculating the GHG emissions of their manufacturing suppliers. Tools like the FEM should support this type of data gathering and verification. However, in some cases directly measuring emissions can be challenging, so brands and retailers may need to estimate or model GHG emissions using best available tools.

Getting started – process steps for a brand or retailer

For a brand or retailer looking to manage energy and GHG emissions across the manufacturing supply chain, the following process would be recommended:

1. Working to understand energy use and GHG emissions across the manufacturing supply chain:

- Capture data on energy use by type, amount and location across as many manufacturing suppliers as possible
- Understand how much of your value chain is mapped and whether there are significant gaps in supply chain visibility – if so, it will be important to try to push further down into the value chain to ensure suppliers with the highest energy use are known to a brand or retailer.
- Use available data, relevant conversion factors and tools such as the FEM to calculate the relevant GHG emissions across the sites in the manufacturing value chain with available data on energy and GHG emissions.
- For parts of the value chain that are not known, or where data is not available, explore options to model the relevant energy use and GHG emissions for the relevant locations and processes.
- Alternatively, work with a credible 3rd party to carry out mapping and modelling GHG and energy analysis across your manufacturing value chain
- Using all this information, *create a baseline for your existing manufacturing GHG emissions and energy use*, using the most recent year for which you have the most complete available data. A calculation on manufacturing GHG impacts is usually part of a wider process to map and set a baseline for a brand or retailer's full value chain impacts – see other guidance sections in the BRM for more information

2. Setting targets on energy use and GHG emissions across the value chain. Based on the information gathered in step 1 above, the following actions, targets and strategies could be applied by a brand or retailer for supply chain energy use and GHG:

- Setting a target across all manufacturing sites to improve energy use efficiency or GHG emissions per tonne of production (although keeping in mind that this relative target type may not address overall/absolute GHG emissions if production is increased across the fashion industry and within a specific brand/retailer)
- Setting an absolute energy use reduction or GHG emissions reductions target across the manufacturing supply chain (and potentially setting a science-based target on GHG emissions, verified through the Science Based Targets Initiative)
- Setting a target on umbers of suppliers in tier 1 and tier 2 setting ambitious or science-based energy and GHG reduction targets, and supporting this target setting
- Reviewing supplier performance on energy and GHG in the Higg FEM, and supporting them to improve their FEM score in the relevant categories
- Setting targets for number of suppliers (particularly high energy use or GHG emitting sites) enrolling into improvement programmes designed to reduce their impacts
- Supporting or encouraging suppliers into purchasing or investing in renewable energy sources either on or off-site; engaging directly or bringing suppliers into in initiatives such as the Renewable Energy Buyers Association or the UNFCCC Fashion Industry Charter for Climate Action designed to support value chain GHG emissions reductions and renewable energy investment

Typical best practices at factory level

- Purchase renewable energy for on-site electricity use from utilities or through third-party providers, such as through a Power Purchase Agreements (PPAs)
- Carry out an in-depth site assessment with a reputable 3rd party to identify the most cost and impact effective energy and GHG saving options.

- Reconfigure production processes for greater energy efficiency, for example by reducing process time, changing chemical processes, reducing volumes of water heated or optimising machinery for maximum efficiency.
- Wherever feasible, switch to cleaner-burning alternatives with lower GHG emission per KW of power, for example switching from coal to natural gas
- Replace fuel for high-heat processes (such as coal boilers for dyeing) with alternative or newer technology, or switching to powering with more sustainable fuels such as bio-fuels (especially generation 2 biofuels made from waste products)
- Engage key staff in energy saving training both for operating machinery and for day to day factory behaviour such as air conditioning, lighting management
- Install heat exchangers or passive heating/cooling solutions on site
- Create sub-metering in each part of the factory to support pinpointing of energy hotspots
- Consider electrification of key processes wherever possible e.g. using electricity rather than petrol pumps for groundwater sources, using electrical vehicles for moving goods between sites, ensuring generators are electricity powered etc.
- Consider options around installing on-site renewables such as solar or wind energy – particularly in suitable climate zones, in sites with suitable amounts of space, and in countries with government incentives, subsidies or attractive feed-in tarifs

Where to go for further support

For information on measuring and reporting supply chain energy and GHG, go to:

- CDP
- Greenhouse Gas Protocol guidelines
- Higg Facility Environmental Module
- Science Based targets initiative and textile sector guidelines
- UNFCCC Fashion Industry Charter for Climate Action

To address energy and GHG impacts within manufacturing, or to help suppliers engage in sourcing or advocacy for renewable energy, you can consider engaging with:

- Apparel Impact Institute including Clean by Design
- IDH
- PaCT
- REBA
- Solidaridad
- STWI
- Sustainable Apparel Coalition
- WWF

2. Water consumption – potential risk mitigation activities

Water is consumed in high quantities in various parts of the apparel and footwear value chain, particularly in:

- Raw material production such as cultivation of cotton
- Processing of raw materials such as processing of cellulosic fibres
- Wet processing including dyeing, finishing and laundry, and leather tanning
- The customer use phase of a garment, mainly through washing

According to the World Resources Institute the following definitions apply:

"Water use" describes the total amount of water withdrawn from its source to be used. Measures of water usage help evaluate the level of demand from industrial, agricultural, and domestic users. For example, a manufacturing plant might require 10,000 gallons of freshwater a day for cooling, running, or cleaning its equipment. Even if the plant returns 95 percent of that water to the watershed, the plant needs all 10,000 gallons to operate.

"Water consumption" is the portion of water use that is not returned to the original water source after being withdrawn. Consumption occurs when water is lost into the atmosphere through evaporation or incorporated into a product or plant (such as a corn stalk) and is no longer available for reuse. Water consumption is particularly relevant when analyzing water scarcity and the impact of human activities on water availability. For example, irrigated agriculture accounts for 70 percent of water use worldwide and almost 50 percent of that is lost, either evaporated into the atmosphere or transpired through plant leaves.

For this guidance, **the focus will be on water use in the manufacturing part of the value chain, particularly water use in wet processing and tanning**. Other sections of the Higg BRM will cover raw materials production and processing, as well as consumer use phase impacts.

I will be important to note that **water use in itself is not inherently harmful if done in a context where there is suitable water regulation and planning, and abundant water resources available for all other water users and for natural ecosystems. Water use becomes harmful when in the context of a 'high water risk environment'** – with low water availability in ground, surface or other water sources, damaged ecosystems, poor water governance or challenges around local populations having access to improved water and sanitation. This distinction means that a brand or retailer water strategy should ideally reflect not only the amounts of water being used in various parts of the value chain, but the level of harm this water use is potentially causing.

Typical sources of water for a manufacturer

Groundwater
Groundwater is water that is pumped from the stored water at the water table below the earth, usually through individual tube wells for each factory, although sometimes through shared infrastructure e.g. for an industrial park or cluster.

Groundwater is often favoured for wet processing because it is relatively clean and often fairly poorly regulated – many governments in textiles production regions allow for unlicensed groundwater extraction, high levels of licensed groundwater extraction, or do not effectively enforce groundwater extraction limits.

Groundwater levels in some manufacturing areas are dropping fast, in part due to the over-extraction of textiles and apparel manufacturers. For example, groundwater levels in Dhaka, Bangladesh are massively over-depleted, and in some parts of the city are dropping by approximately 1 meter per year.

If groundwater becomes polluted, it may be necessary for factories to pre-treat it before use in wet processes. Fossil energy is often used for pumping groundwater, creating energy and GHG impacts from water use. Water is then heated, cooled and cleaned at various stages of production, each time using energy, chemicals and other inputs. So water efficiency in wet processes can also reduce energy and chemical use and be a good indicator for overall site efficiency.

Municipal water supply
It is also possible that factories are using municipal water sources as inputs to their processes, particularly if they are based near cities or in countries with extensive water infrastructure.

Municipal water supplies are generally clean, and can be charged at a flat rate for access or pro-rata rate for volumes used – often at a subsidised or fairly low price.

Municipal water supplies in some countries might be under stress, depending on the sources they are using for their water, the competing demands on supply, and access to water by local populations. In some cases, lack of access to municipal water for local populations is as much about economic barriers such as lack of infrastructure or pricing, rather than competition for supply – so one should be cautious about assuming that high water use directly leads to poor access to water and sanitation for local populations. However in some countries, for example in South Africa, they are experiencing acute challenges with supplying adequate water to cities, meaning that use of municipal water sources in those contexts is likely to be high risk, controversial or banned entirely.

Other possible sources of water

Rainwater
Some sites have installed rainwater harvesting facilities to allow them to capture and store rainwater for use at facility level. This is likely much lower risk than other water sources (depending on the context), however usually requires investment in the relevant infrastructure as well as finding space within the facility. For this reason, sites do not routinely invest in rainwater harvesting facilities

Surface water
Some sites will draw water from surface water sources, such as rivers, lakes or other water bodies. This can mean that water needs to be treated before use in wet processing. Surface water sources can potentially vary quite a bit in terms of availability, for example due to seasonal changes, droughts, use by other water users, or changes in rainfall. For this reason, it is less common to use surface water as inputs to wet processing, although many sites discharge wastewater to surface water bodies.

Recycled water
Some sites have refined their processes to allow them to use water repeatedly – either by circulating it multiple times for things like heating and cooling, or by cleaning water and using the cleaned water as inputs back into wet processes. This is usually made possible by more sophisticated water treatment facilities which treat water to a usable quality. Recycling of water has many benefits, and the whole system can potentially operate in an almost closed loop system, with just 'topup' amounts of water needed to replace any leaks or evaporation during the process. It is also possible that sites could take high quality from other sites nearby, in an approach often called 'Industrial Ecology' where outputs from one factory can be used as inputs for another.

Trucked water
In some regions, such as parts of Pakistan, there can be major challenges around accessing water during particular times of year – for example due to drought or delayed rains, or infrastructure problems. In these cases, it is also possible to see manufacturers using trucked water to keep

operations working. This is obviously not very efficient, has higher cost implications, and represents a significant operational risk for sites reliant on this type of water source to keep production happening.

Getting started – process steps for a brand or retailer

For a brand or retailer wanting to get started in addressing water use impacts, the following 3 steps listed outlined on the next page may be useful to consider:

1. **Setting a water use policy** at company level, particularly including wording around respecting the human right to water, support of SDG6, and committing to reducing water use impacts, particularly in all regions with high water risk or stress.

2. **Working to understand water use and risk in each part of the value chain**. For manufacturing, this means:

- Identifying which suppliers are using high volumes of water (or which sites are carrying out typically high water-use activities like dyeing and finishing).
- Understanding whether high impact processes such as dyeing, laundry, tanning etc are captured within the known supplier list for a company. If you have not yet captured these functions in your supplier lists, for example because you only have information on 'Cut Make Trim' suppliers, it will be important to try to push further down into the value chain to ensure suppliers with the highest water use are known to a brand or retailer.
- Exploring the water risk context for high water use suppliers, including understanding the degree of water stress by water source, as well as understanding the robustness of local and national water regulation and planning, and the degree of pressure on water for ecosystems. This can be done using the WWF Water Risk Filter, the WRI Aqueduct Tool, or data on water regulation and planning under SDG 6.5.
- The Higg FEM also provides suppliers with a mechanism to assess themselves on whether they are a major water user and whether they are in a high water risk location as part of the materiality test for the water use section, so brands and retailers with suppliers using the FEM can use this as a way to understand these questions
- It is also useful to benchmark the water use performance and improvement plans of sites with high water use operations or located in areas of high water risk. The Higg FEM can also support this analysis, by capturing each supplier's impact and activities around water. This performance can be benchmarked against national average FEM performance for each country, against a benchmark of best practice such as achieving level 2 or 3 in the water use sections of the FEM, or on whether suppliers are applying specific water use limits or best practices such as applying water recycling, leak reduction or rainwater harvesting.

3. **Setting targets on water use across the value chain.** Based on the information gathered in step 2 above, the following actions, targets and strategies could be applied by a brand or retailer for supply chain water use:

- The supplier Code of Conduct or other minimum standards should ensure that suppliers are expected to be aligned with local and national water use regulations, including having suitable and up to date water extraction licences, aligning with water use or extraction limits, and having processes in place to track water use legislation and requirements.
- As part of either minimum standards or a supplier improvement programme, the following targets or goals are also useful to consider rolling out across the manufacturing supply chain:
    - Number or percentage of suppliers with continuous improvement programmes on water use efficiency and absolute water use
    - Total volume of water use reduction from suppliers in high water risk regions
    - Number or percentage of suppliers reaching a specific minimum level of performance in the Higg FEM (e.g. level 1 or 2), or number or percentage of sites with high water use or risks reaching higher levels of performance (e.g. level 3 for sites with wet processing in highly water stressed and poorly regulated areas)
    - Number or percentage of suppliers (or number/percentage of suppliers with high water use or located in high water stress/risk areas) applying specific site best practices such as those as listed in the section below
    - Number or percentage of suppliers operating within their appropriate absolute water use limits, as determined by a) relevant government departments or authorities b) a credible multi-stakeholder water user group or c) by a recognised 3rd party initiative such as the Science Based Targets Network
    - Number or percentage of suppliers taking part in a programme to reduce absolute water use at site level, support appropriate site water target setting, or to collectively address water risks and regulatory gaps in the relevant regions

Typical best practices at factory level

For supplier sites with high water use, the following best practices can be helpful for managing risk of harm:

- Assessment by a credible on-site auditor or technical service provider to identify the most effective and cost-efficient interventions for water use reduction
- Identification and fixing of leaks across the site
- Training for staff in water saving practices including reduction of spills, immediate responses to leaks, and efficient use of water during cleaning
- Identifying water recycling opportunities including re-use of treated water, cooling water or water from other sites
- Exploring how to optimise process steps, chemistry and use of existing machinery to increase water efficiency (requires technical process analysis, higher investment and potentially a pause in production which can be challenging for sites)
- Exploring options around new technology, processes and machinery, such as lower water or waterless dyeing technologies (as above can be complex and requires even higher investment by sites as well as suitable technical expertise nearby for long-term maintenance)
- Exploring options around alternative water sources if water sources being used are particularly stressed/high risk. Could include switching to surface, municipal or rainwater water sources if practical and financially feasible

Where to go for further support

For further support around implementing site best practices around water use, consider one of the following programmes:

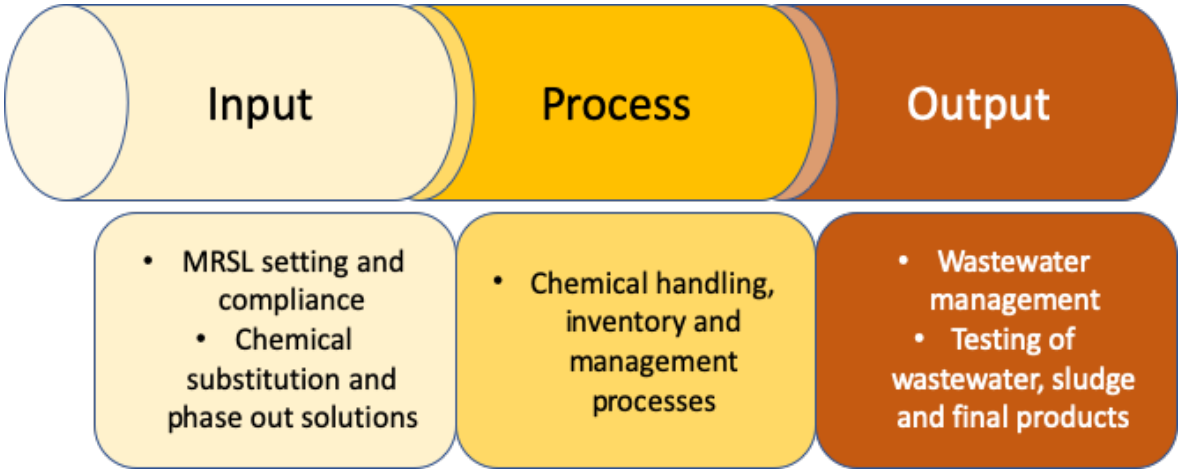
- Apparel Impact Institute including Clean by Design
- GIZ
- IDH
- International Finance Corporation (IFC)
- PaCT
- Solidaridad
- STWI
- UNIDO
- WWF

Organisations that can support on overall strategies around water management and stewardship as well as collective efforts around addressing contextual water risks:

- 2030 WRG
- AWS
- CDP Water
- CEO Water Mandate
- IUCN
- Science Based Targets Network
- WWF

3. Chemicals – potential risk mitigation activities

There are three elements main of chemical management – input, process and output. Sometimes input solutions are known as 'start of pipe' solutions and output solutions are known as 'end of pipe' solutions.



- **Input** covers processes that control the inputs of chemicals into a system, such as substitution of chemistry in processes, bans on specific chemicals, and rollout and verification of Manufacturer Restricted Substances Lists (MRSLs) to suppliers. MRSL provides brands, retailers, suppliers and manufacturers with acceptable limits of restricted substances in chemical formulations which are used in the raw material and product manufacturing processes.

- **Process** covers controls on handling and management systems for chemicals on-site, including a chemical inventory

- **Output** typically means the processes that can prevent chemicals from being discharged or leaked into the environment, particularly wastewater treatment processes. This includes testing of wastewater and sludge quality, as well as testing for chemical residue in sold products. As wastewater treatment has its own section later in this document, that topic will be covered specifically in the section below. The focus on this section will be on limit values for finished products, often referred to as a Product Restricted Substance List (RSL). This is a chemical checklist when testing finished products for the presence of restricted substances. An RSL does not have any involvement with the manufacturing process and only applies to finished articles.

Getting started – process steps for a brand or retailer

For a brand or retailer looking to manage chemicals across the supply chain, the following process would be recommended:

For 'input' interventions, a typical process at brand or retail level would be to:

1. Review existing standards and processes around chemical management for suppliers, including:
   - Supplier Code of Conduct documents
   - Manufacturing restricted substances list (MRSL)
   - Verification mechanisms for MRSL compliance

2. Benchmark your existing processes and standards against industry best practices such as Zero Discharge of Hazardous Chemicals (ZDHC), Bluesign or Oeko-tex, taking account of:
   - Which chemicals are recommended for phase-out or substitution, and how well existing company MRSL covers chemicals of concern (it is also acceptable just to adopt the MRSL of credible industry groups such as ZDHC)
   - How your MRSL can be verified at site level e.g. audit checklist
   - What verification mechanisms are put in place to ensure MRSL compliance, for example through:
     - Internal company audit systems
     - Industry mechanisms such as Higg Facility Environmental Module
     - Independent verifiers
     - 3rd party certification schemes compatible with your MRSL requirements

3. Update your systems to align with best practices around chemical input management, including:
   - Potential updates to your supplier code of conduct and verification systems.
   - Consider which tiers of your supply chain will need to be in scope in order to address the risks around each type of process and location, and explore mechanisms for going beyond tier 1 if not already done.
   - Review which of your suppliers is operating in line with best practice standards and which will need additional support in order to align.
   - Clarify and agree with sourcing teams and with suppliers what long-term business consequences (both positive and negative) would result from compliance or non-compliance
   - For those suppliers requiring support to reach compliance, carry out a gap analysis against verification programmes and create a time-bound improvement plan to address gaps in collaboration with the supplier management teams.
   - Wherever possible, identify third parties local to the relevant suppliers who are able to support their progress towards compliance and/or verify their results

For more information on how to apply an MRSL to your supply chain, please review the guidance from Zero Discharge of Hazardous Chemicals

For 'process' interventions, a typical process at brand or retail level would be to:

1. Review your own internal protocols and those of your suppliers around chemical handling practices, chemical inventory processes, and chemical management strategies

2. Explore whether elements of 3rd party processes and standards such as ZDHC's chemical inventory template or management system guidelines would be of additional value within your supply chain

3. Update your systems to leverage any additional best practices around chemical management, and ensure that any relevant internal tools, mechanisms or supplier management systems are tailored to the new requirements

For 'output' interventions (excluding wastewater), a brand or retailer can:

1. Review existing product testing protocols for finished garments, including
    - Limit values for specific chemicals (often known as RSL or Product RSL lists)
    - Protocols for testing including frequency and permitted labs
    - Special requirements for specific products such as children and baby products
2. Benchmark or compare against standards such as Oeko-tex 100 or the GOTS residue testing parameters
3. Consider increasing standards on testing frequency, limit values or other technical elements if gaps are identified from industry best practices, or consider adopting Oeko-tex 100, GOTS or another credible 3rd party standard at scale or for specific ranges or product types, such as baby products

Information on wastewater quality management and effluent treatment plants can be found later in this document in the wastewater section

Typical best practices at factory level

For supplier sites using chemicals, the following best practices can be helpful for managing risk of harm from chemicals:

- A clear Restricted Substances List for all products – ideally taking account of industry best practices or the combined requirements of customers (this can be challenging for suppliers if their customers have multiple different RSL requirements)
- An inventory of all chemicals being used on-site including chemical supplier details
- Training and personal protective equipment for members of staff using chemicals, as well as safe storage areas for chemicals and controls of any spills or leakage
- Documentation of processes around chemical management
- At least one senior member of staff accountable for chemical management on-site
- Verification processes in place to demonstrate compliance with MRSL, chemical management processes, and product chemical limit value compliance if necessary.

Where to go for further support

- American Apparel and Footwear Association (AAFA) and the AFIRM Group has a well-known RSL
- Bluesign has an integrated verification system around chemical impacts including an RSL list
- GOTS is a certification scheme designed to create a chain of custody for organic raw materials, whilst also putting controls on chemical impacts at various stages of production.
- Oeko-tex 100 and their range of other standards, which have options for specific controls on restricted substances, chemical limits in finished goods, and other options for verification of a site or product
- ZDHC initiative including support on identifying auditors and technical organisations in key regions

4. Wastewater – potential risk mitigation activities

Wastewater and water quality issues are seen at various parts of the apparel and footwear value chain, particularly in:

- Raw material production such as cultivation of cotton, where chemicals can run off the field into water bodies
- Processing of raw materials such as processing of cellulosic fibres where use of toxic chemicals can result in poor quality wastewater
- Wet processing including dyeing, finishing and laundry, and leather tanning where toxic chemicals and overall poor-quality water can be discharged into water bodies

For this guidance, **the focus will be on wastewater discharged in the manufacturing part of the value chain, particularly water quality issues from wet processing and tanning**. Other sections of the Higg BRM will cover raw materials production and processing impacts including water pollution and wastewater.

Getting started – process steps for a brand or retailer

For a brand or retailer looking to manage wastewater quality across the manufacturing supply chain, the following process would be recommended:

1. **Setting a water quality policy** or code of conduct criteria at company level, establishing minimum water quality performance across at least tier 1 and tier 2 of manufacturing, as well as ways that best in class water treatment can be achieved.

2. **Working to understand water quality risk in each part of the value chain**. For manufacturing, this means:

- Understanding whether high wastewater impact processes such as dyeing, laundry, tanning etc are captured within the known supplier list for a company. If you have not yet captured these functions in your supplier lists, for example because you only have information on 'Cut Make Trim' suppliers, it will be important to try to push further down into the value chain to ensure suppliers with the highest water use are known to a brand or retailer.
- Understanding wastewater practices and standards for all relevant manufacturers, particularly those with wet processing or tanning on-site, considering the following elements:
    - Volumes of wastewater discharged and whether capacity is sufficient
    - Overall quality of the wastewater on BOD, COD, TSS, PH and temperature, as well as presence of particular contaminants or toxic chemicals
    - Whether a functional and suitable Effluent Treatment Plant is operating on site to treat all wastewater from the supplier
    - Whether supplier is compliant with legally mandated discharge limits for wastewater
    - Whether supplier is applying or verified against a specific level of the ZDHC wastewater standards or against the BSR water quality guidelines.
    - The Higg FEM captures many of these practices and brands and retailers with suppliers filling out the FEM can use that data to carry out this analysis.
- Exploring the degree of existing water quality risk in the relevant location for each supplier, including whether water sources are already polluted, whether local populations or ecosystems nearby are likely to be vulnerable to water quality impacts, as well as understanding the robustness of local and national water quality regulation. This can be done using the WWF Water Risk Filter, the WRI Aqueduct Tool, or data on water regulation and planning under SDG 6.5.
- Using this combined data to understand which suppliers are a risk for wastewater impacts, based on their wastewater volumes, operation type, on-site practices, the legal controls put on them and whether there are contextual vulnerabilities likely to make wastewater impacts worse.

Last step continued on the next page

3. Setting targets on water quality across the value chain. Based on the information gathered in step 2 above, the following actions, targets and strategies could be applied by a brand or retailer for supply chain water use:

- The supplier Code of Conduct or other minimum standards should as a minimum ensure that suppliers are aligned with local and national water quality regulations, including having a functional ETP
- In addition, it is strongly recommended that brands or retailers put in place one of the following requirements
    - All sites with significant volumes of wastewater or high-water quality impact activities should apply and verify performance against the ZDHC wastewater quality standard OR the BSR water quality standard
    - All sites with significant volumes of wastewater or high-water quality impact activities should apply and verify performance against level 2+ of the ZDHC wastewater quality standard OR the BSR water quality standard OR national/regional wastewater standards, whichever is higher
    - Sites with poor performance on wastewater quality and high contextual water quality risks should be included into an improvement programme through a credible 3rd party

Typical best practices at factory level

For supplier sites with high water quality impacts, the following best practices can be helpful for managing risk of harm:

On-site Effluent Treatment:

If effluent treatment is primarily or fully carried out on-site, it is first important to ensure that basic effluent treatment systems are in place, including:

- Ensuring that no untreated water is discharged
- Ensuring that the ETP is capable of processing the volumes of water required, with safe mechanisms to redirect excess wastewater to off-flow water tanks if capacity is overwhelmed through increased production, rainfall, floods etc
- Ensuring that there is a suitably trained member of staff on-site to monitor and manage ETP functionality
- Ensuring that there are mechanisms in place to ensure that ETP functionality is up to the required standard, for example regular monitoring of key machinery, testing of outflowing wastewater, etc
- Ensuring that there are mechanisms in place to monitor and comply with legal wastewater treatment licences and performance standards
- Ensuring that 3rd party technical support is available for ETP fixing/maintenance, and that credible verification bodies are available to test wastewater discharge levels

In addition, for highly toxic or polluted wastewater, it is also important to ensure that:

- Multiple layers of water treatment are applied, including physical separation, biological or chemical treatment. Sometimes reverse osmosis or other membrane filtration is also needed to fully purify water
- Sludge management is critical to preventing pollution, as if it is not disposed of carefully the pollutants removed may find their way back into water bodies. Sludge should also be tested for toxicity and chemical levels, and suppliers should have a contract in place with a credible sludge management agency in place to ensure that sludge is disposed of in a responsible way

Off-site Effluent Treatment:

If effluent treatment is primarily carried out by a 3rd party, Common Effluent Treatment Plant (CETP) or municipal treatment plant, there are fewer mechanisms to verify water quality performance. However, there are a few possible options that can be explored, including:

- Ensure that any pre-treatment required for discharged water is carried out in line with the specified requirements of the off-site ETP provider, taking similar steps as above for on-site ETP functionality
- Ask suppliers to engage with the off-site ETP provider to see if they are prepared to share information on water treatment quality, and whether they would consider increasing standards if enough of their customers request that they do so
- Ask suppliers to engage within shared systems such as local government, Industrial Parks or other textiles producers to see whether additional requirements/performance can be requested from off-site ETP providers – or work with a credible convening organisation such as GIZ, WWF or 2030 WRG to create mechanisms for those discussions

Where to go for further support

For further support in setting credible wastewater quality standards and supporting verification and ETP functionality:

- ZDHC initiative including wastewater guidelines and process guidelines
- BSR wastewater quality standard

For further support around implementing site best practices around water use, consider one of the following programmes:

- Apparel Impact Institute including Clean by Design
- IDH
- PaCT
- Solidaridad
- STWI
- WWF

For information on organisations that are able to support overall water stewardship strategies and programmes, see the below section on water consumption